

Perulibatrachus aquilonarius, a New Toadfish Species from India (Teleostei: Batrachoididae)

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The fourth known species in the genus *Perulibatrachus* is described. It is the northernmost species in the genus, and the second known from the Indian Ocean. It has a wider head than the other described species and differs from others in counts: dorsal-fin elements III-17, anal-fin rays 13, pectoral-fin rays 21, vertebrae 26. It has a shallow, funnel-shaped pocket in the pectoral-fin axil.

The genus *Perulibatrachus* is currently represented by three species. Two species are known only from the west coast of Africa: *P. elminensis* (Bleeker, 1863) from Ghana south to Walvis Bay, Namibia, and *P. rossignoli* (Roux, 1957) from Gabon south to Walvis Bay (Roux 1981; Hutchins 1986). A third species, *P. kilburni* Greenfield, 1996, is known only from Natal, southeastern South Africa. In 1941, A.W.C.T. Herre collected a toadfish specimen, purportedly in India, which he or someone else had identified as *Chatrabus damaranus*. The specimen had been deposited in the ichthyological collections of Stanford University and later transferred to the California Academy of Sciences along with the rest of Stanford's collections. Recently, I found the specimen on the shelves at the Academy and on examination discovered that it does not belong to the genus *Chatrabus* but to the genus *Perulibatrachus*. The genus *Chatrabus* was described by Smith in 1949, whereas *Perulibatrachus* was not described by Roux and Whitley until 1972. Thus, at the time of its identification, *Chatrabus* would have been a logical choice in which to place this specimen.

The most recent key to toadfish genera is that of Smith (1952). In that key, *Perulibatrachus* would fall in section BIII, which includes *Chatrabus*, *Barchatus*, *Tharbacus*, *Batrachoides*, and *Halobatrachus*. Hutchins (1986) considers *Tharbacus* to be a synonym of *Chatrabus*. Roux (1981) presents a key to separate *Perulibatrachus* from *Halobatrachus*, which has a distinct foramen (axillary pore) on the upper part of the pectoral-fin axil, whereas the other genera have only a funnel-shaped pocket (*Perulibatrachus*) or neither a foramen nor pocket (*Chatrabus* and *Batrachoides*). In species without the pocket, the skin stretches straight across the pectoral-fin axil, whereas in *Perulibatrachus* there is a clear indentation, which is shallow in *P. rossignoli* or relatively deep in both *P. elminensis* and *P. kilburni*. The specimen from India has three dorsal-fin spines and two subopercular spines, placing it in the subfamily Batrachoidinae. The body is mostly scaled, it lacks a foramen in the pectoral-fin axil, and it has a shallow funnel-shaped pocket in the pectoral-fin axil, placing it in the genus *Perulibatrachus*.

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MATERIALS AND METHODS

All counts and measurements follow Hubbs and Lagler (1964) except that the last two fin rays are not counted as one unless it is clear that they are joined at the base. Measurements were made to the nearest 0.1 mm using dial calipers. All measurements are expressed as percentage of standard length (SL). Counts were made from a radiograph. Neither the holotype nor any additional material of *P. rossignoli* could be located at the Museum National d'Histoire Naturelle, Paris, by M.L. Bauchout and J.E. Randall, so comparisons with that species are based on the literature. Institutional abbreviations are as listed in Leviton et al. (1985).

SPECIES DESCRIPTION

Perulibatrachus aquilonarius Greenfield, sp. nov.

(Figs. 1A–B)

MATERIAL EXAMINED.— HOLOTYPE: CAS-SU 41322, 191.4 mm SL, India, Tamil Nadu State, Ennur Fisheries Station, Madras, January, 1941, A.W.T.C. Herre. ADDITIONAL MATERIAL EXAMINED: *Perulibatrachus kilburni*, RUSI 28203 (1; 56.6 mm SL). *Perulibatrachus elminensis*, MNHN 1967-909 (1; 204 mm SL), MNHN 1970-43 (1; 150 mm SL; cleared and stained).

DIAGNOSIS.— A species of *Perulibatrachus* with a wide head (43.6% SL), 17 dorsal-fin rays, 13 anal-fin rays, 21 pectoral-fin rays, 26 vertebrae, and a shallow, funnel-shaped pocket in the pectoral-fin axil.

DESCRIPTION.— Dorsal-fin elements III-17; anal-fin rays 13; pectoral-fin rays 21; vertebrae 26; head length 45.0; head width 43.6; head depth 25.3; bony interorbital width 9.5; orbit diameter 7.6; snout length 8.8; upper jaw length 25.9; mouth width at rictus 36.1; first predorsal-fin distance 42.1; second predorsal-fin distance 61.6; preanal-fin distance 72.5; greatest body depth 25.2; caudal-peduncle depth 9.8; caudal-peduncle length 13.6; first dorsal-fin base length 11.4; second dorsal-fin base length 39.6; anal-fin base length 21.5; caudal-fin length 22.7; pectoral-fin length 25.0; pelvic-fin length 26.7; distance between pelvic-fin bases 15.3.

Head moderately depressed and wide, eyes medium in size and not raised above head profile. Pectoral-fin axil with a shallow, funnel-shaped pouch in upper half, glandular tissue present in rest of axil and on sides under pectoral fins. Some glandular tissue present on inner surface of pectoral fins. Body with small scales extending from middle of first dorsal fin back to caudal-fin base. Scales extending forward on ventral surface to pelvic fins. Two lateral lines: the upper one originating above upper opercular spine, running posteriorly in a straight line to below second dorsal-fin origin where it curves up to run along

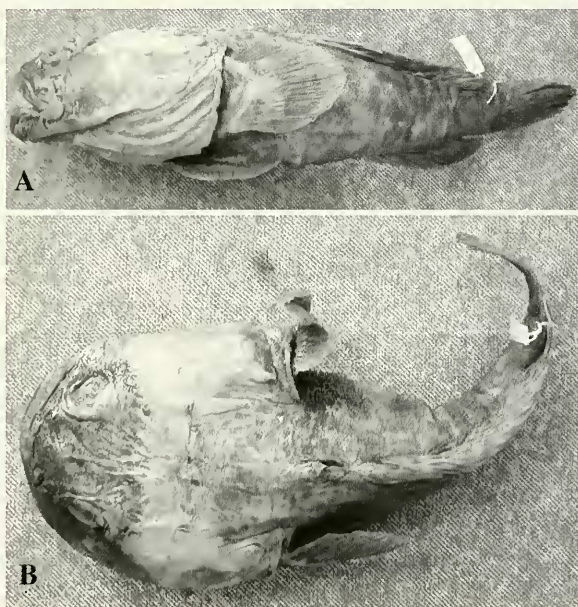


FIGURE 1. Holotype of *Perulibatrachus aquilonarius*, CAS-SU 41322. A. lateral view; B. dorsal view.

dorsal-fin base to its end, with about 41 pores present, each with two short skin flaps; the second lateral line, with about 17 pores, runs along anal-fin base. Vomer and palatine each with single row of slightly curved conical teeth. Dentary laterally with single row of conical teeth, double row near symphysis. Premaxilla with single row of conical teeth posteriorly, double row anteriorly. Subopercle with two spines. Anterior nostrils tubular; nostril on left side with a simple major tentacle; nostril on right side with three terminal tentacles; a cluster of multifid cirri surrounds each tubular nostril. Cirrus at distal end of maxilla with many tips. Ventral margin of dentary with numerous cirri. Dorsal surface of neurocranium completely covered with muscles, no exposed bone.

Color in alcohol: After 64 years in preservative, general background color is cream, overlaid with rusty brown pigment pattern. Anterior portion of head from posterior margin of eyes forward rusty brown. A cream band running from posterior margins of eyes posteriorly to opercular spine forms a distinct band across the head. The area posterior to this and extending back to first dorsal-fin origin overlaid with distinct, small, rust-colored spots. Sides of body, second dorsal fin, anal fin, pectoral, and caudal fins with scattered, irregular rust-colored spots. Ventral surface of head cream, area from pelvic fins posteriorly to anal-fin origin rust.

ETYMOLOGY.— The specific epithet is an adjective from the Latin, *aquilonarius*, meaning northern, referring the fact that this species has the northernmost distribution of any member of the genus *Perulibatrachus*.

COMPARISONS.— *Perulibatrachus aquilonarius* differs from all other species in the genus by having a wider head: 43.6 versus 29.7 in *P. kilburni*, 29.1–37.9 in *P. elminensis*, and 37.8–40.9 in *P. rossignoli*. It differs from *P. rossignoli* by having 17 versus 19 second dorsal-fin rays, 21 versus 23 pectoral-fin rays, and 26 versus 29 vertebrae. It differs from *P. elminensis* by having 13 versus 14–17 anal-fin rays, 21 versus 26 pectoral-fin rays, and 26 versus 27–28 vertebrae. It differs from *P. kilburni* by having 17 versus 18 dorsal-fin rays, 13 versus 14 anal-fin rays, and 21 versus 19 pectoral-fin rays. It has a shallow, funnel-shaped axillary pocket, whereas it is deep in *P. elminensis* and *P. kilburni*.

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LITERATURE CITED

- BLEEKER, P. 1863. Mémoire sur les poissons de la côte de Guinée. *Natuurkundige Verhandelungen van de Hollandsche Maatschappij der Wetenschappen te Haarlem*, ser. 2, 18:1–136, 28 pls.
- GREENFIELD, D.W. 1996. *Perulibatrachus kilburni*, a new toadfish from East Africa. *Copeia* 1996:901–904.
- HUBBS, C.L., AND K.F. LAGLER. 1964. *Fishes of the Great Lakes Region*. University of Michigan Press, Ann Arbor, Michigan, USA. 213 pp.
- HUTCHINS, J.B. 1986. Family No. 100: Batrachoididae. Pages 358–361 in M.M. Smith and P.C. Heemstra, eds., *Smith's Sea Fishes*. Macmillan South Africa, Johannesburg, South Africa. 1047 pp.
- LEVITON, A.E., R.H. GIBBS, JR., E. HEAL, AND C.E. DAWSON. 1985. Standards in herpetology and ichthyology. Part I. Standard symbolic codes for institutional resource collections in herpetology and ichthyology. *Copeia* 1985:802–832.

- ROUX, C. 1957. Poissons marins. Pages 139–253 in J. Collignon, M. Rossignol, and C. Roux. *Mollusques, Crustacés, Poissons marins des côtes d'A.E.F. en collection au Centre d'Océanographie de l'Institut d'Études Centrafricaines de Point-Noir*. Office de la Recherche Scientifique et Technique Outre-Mer, Paris, France. 369 pp.
- ROUX, C. 1981. Batrachoididae. Vol. 1. In W. Fisher, G. Bianchi, and W.B. Scott, eds., *FAO species identification sheets for fishery purposes. Eastern Central Atlantic; fishing areas 34, 47 (in part)*. Vols. 1–7. Canada Funds-in-Trust. Ottawa, Department of Fisheries and Oceans Canada, by arrangement with the Food and Agriculture Organization of the United Nations, Ottawa, Ontario, Canada. (No page numbers.)
- ROUX, C., AND G. WHITLEY. 1972. *Perulibatrachus*, nouveau nom de genre de Poissons Téléostéens de la famille des Batrachoididae, en remplacement de *Parabatrachus* Roux, 1970. *Bulletin du Muséum National d'Histoire Naturelle Zoologie* 6(1971):349–350.
- SMITH, J.L.B. 1949. *The Sea Fishes of Southern Africa*. Central News Agency, Ltd., Cape Town, South Africa. 550 pp.
- SMITH, J.L.B. 1952. The fishes of the family Batrachoididae from South and East Africa. *Annals and Magazine of Natural History*, ser. 12, 5(52):313–339.